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None

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(54) Tap particularly for beer

(57) A tap particularly intended for dispensing of a beer, including low carbonated beer, incorporates an extension 9 downstream of the sealing member which does not restrict flow except when the tap is in the fully open position when the extension is drawn into a restricted portion 11 of the bore to produce a large pressure drop and creaming of the beer. Engagement of heel 16 in groove 18 defines an open position in which the extension is still located in enlarged portion 13 of the bore.

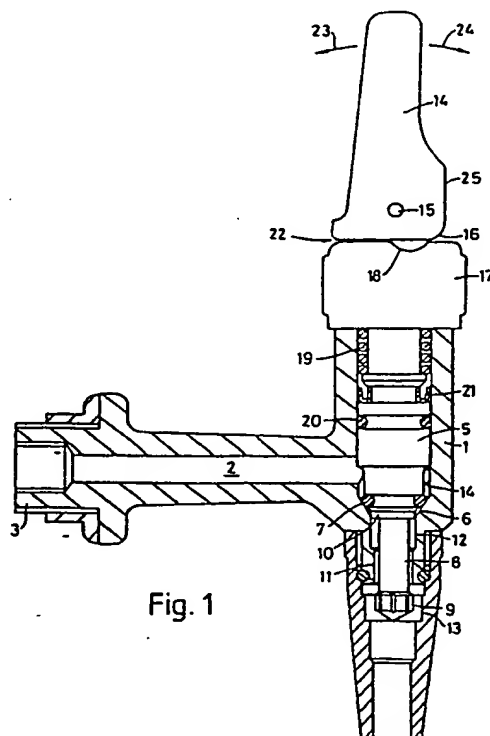


Fig. 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

GB 2 225 839 A

1/3

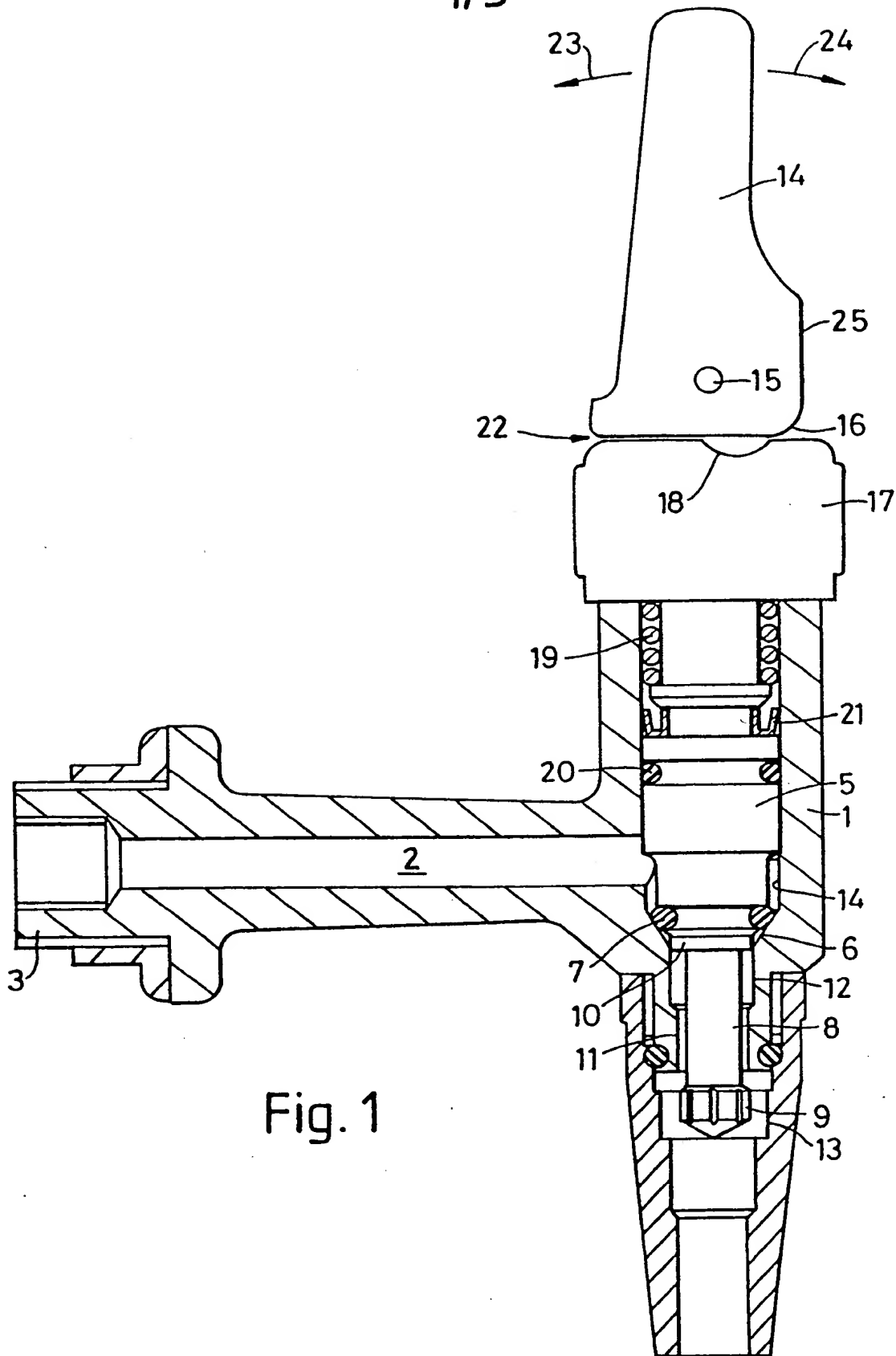


Fig. 1

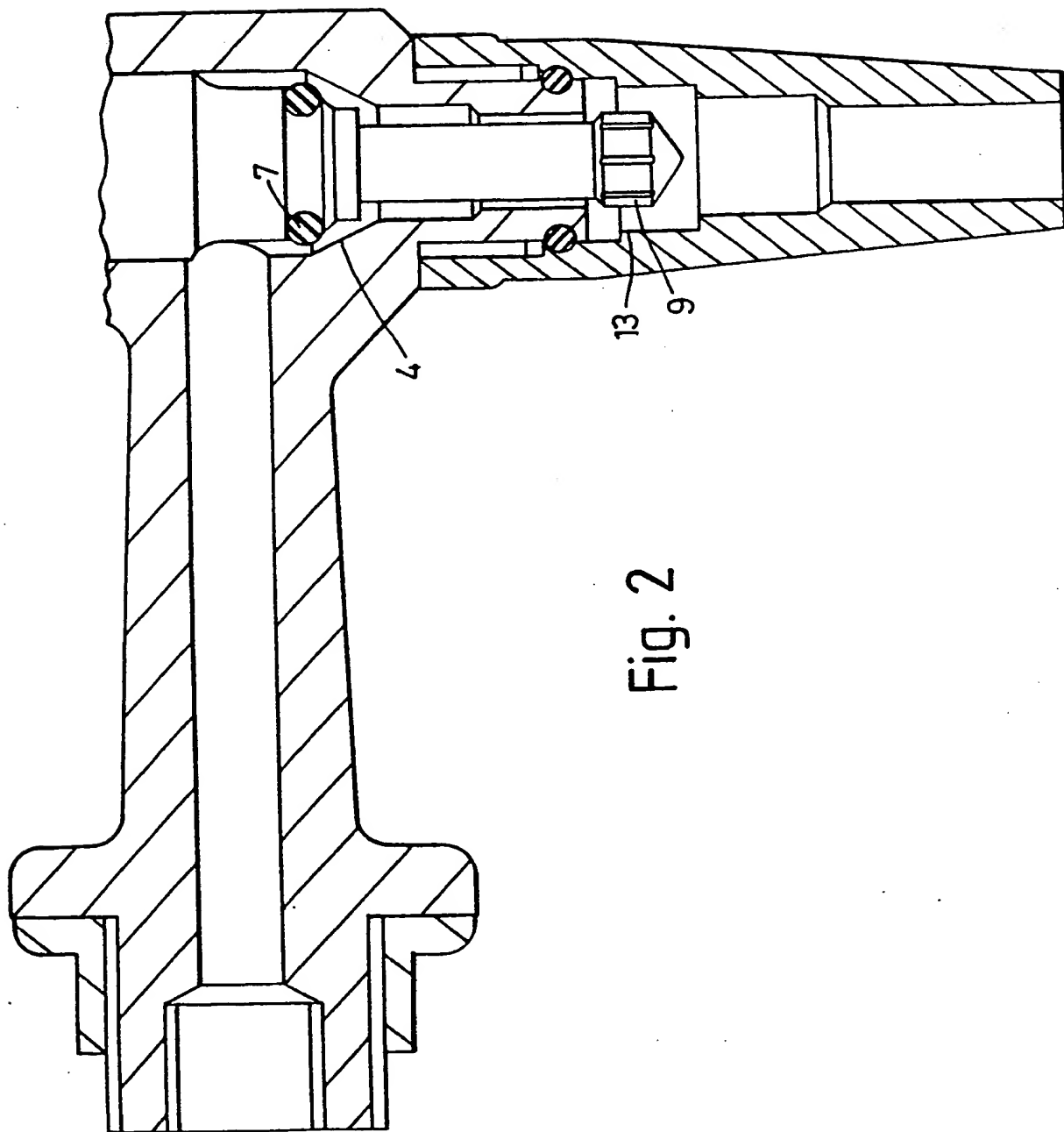


Fig. 2

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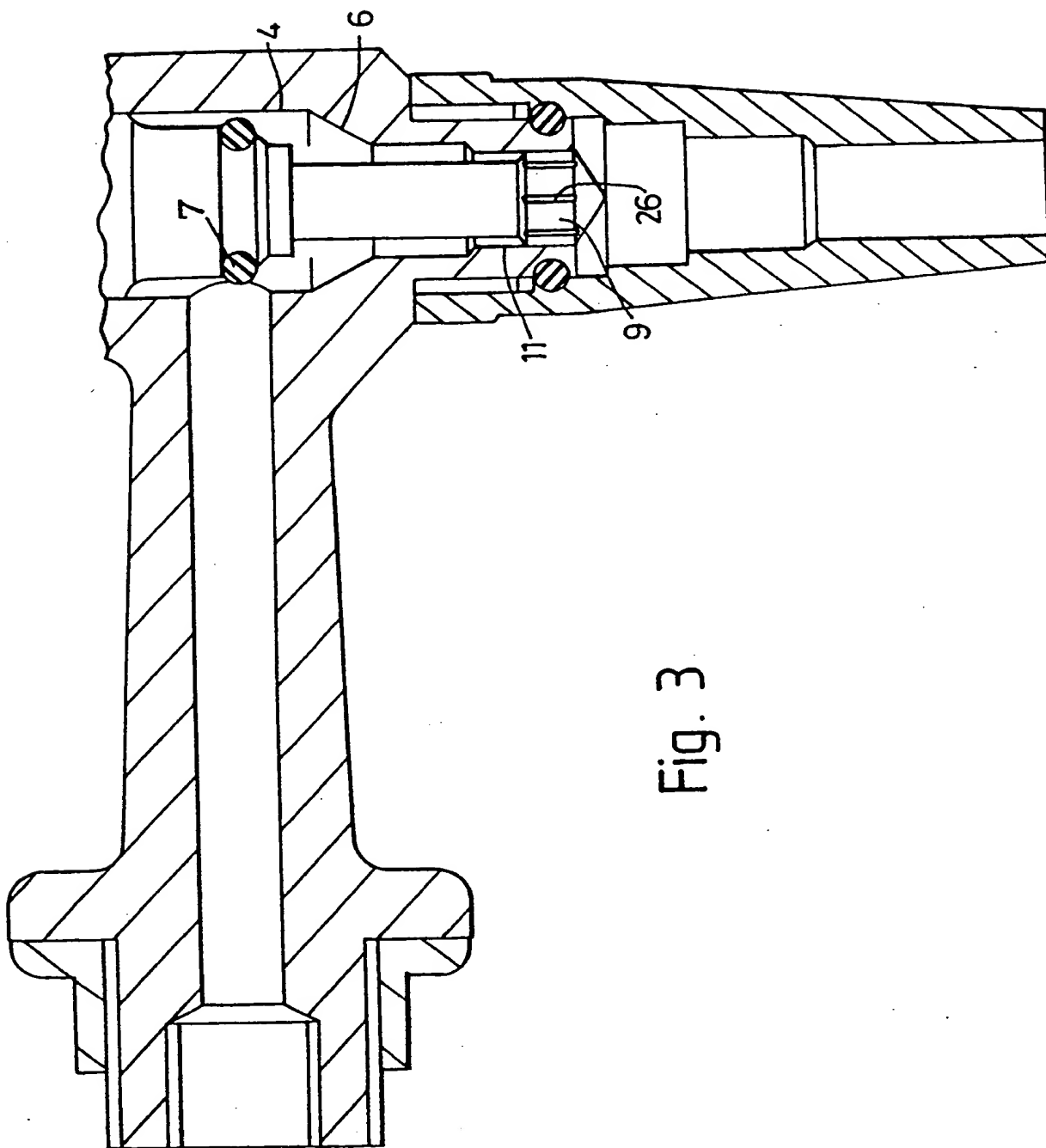


Fig. 3

Tap

This invention relates to taps and has particular, but not exclusive, reference to taps for dispensing beer specifically low carbonated beer.

It is well known that many beers contain  
5 dissolved quantities of gas and specifically dissolved quantities of carbon dioxide. The carbon dioxide is used to preserve the beer, to add sparkle to the beer and, in part, as a pressure medium to aid dispensing of the beer. Low carbonated beers are deemed to be  
10 those beers which contain less than two volumes of carbon dioxide for each volume of beer. More highly carbonated beers contain more than two volumes of carbon dioxide per volume of beer. It is an important part of the presentation of beer that it be provided  
15 with a creamy head. In some cases it is difficult to ensure that too much head is not provided, but in the case of low carbonated beers it can be difficult to ensure that a sufficient head is provided. The present invention is concerned with a tap which has  
20 particular use in the dispensing of beer of the low carbonated variety, but which can be used in certain circumstances to dispense more highly carbonated beer.

By the present invention there is provided a tap for dispensing beverage containing a dissolved  
25 gas, the tap including a body having a passage therethrough for the flow of beverage from an inlet to an outlet, a sealing member movable in the body between a sealed position and an open position, the member including a downstream extension beyond the  
30 sealing region, the downstream extension having a narrower cross-section and an enlarged cross-section, the narrower cross-section being between the enlarged cross-section and the sealing region, the bore of the

tap body downstream of the sealing member including a narrower cross-sectional area portion and downstream of the narrower cross-sectional area portion a larger cross-sectional area portion, the enlarged

5 cross-section of the downstream extension being in the larger cross-sectional area portion of the bore when the tap is in the closed position, the relative dimensions of the body and the extension being such that the enlarged cross-sectional area of the  
10 extension enters the smaller cross-sectional portion of the bore as the sealing member of the tap approaches the fully open position so that the flow of beer through the tap is constricted as the tap reaches the fully open position to produce agitation of the  
15 beer.

There may be provided an enlarged cross-sectional area shoulder between the sealing member and the narrower cross-sectional area of the extension.

20 The sealing region is preferably an 'O' ring which cooperates with a frusto-conical portion of the bore of the tap.

Preferably, all bores within the tap are circular in cross-section. The larger cross-sectional  
25 area portion of the extension may incorporate grooves. The grooves may be axially located along the length of the larger cross-sectional area extension.

The tap may provide for a closed position, a fully open position and a detent to provide a stable  
30 position intermediate the closed and open positions where the larger cross-sectional area of the extension remains in the larger cross-sectional area of the bore. The tap may also be opened by a small amount by

reverse movement of a handle operating the tap to provide for a creaming action.

The sealing member preferably comprises a piston axially movable within a bore in the tap, the  
5 piston may incorporate 'O' ring seals.

By way of example, embodiments of the present invention will now be described with reference to the accompanying drawings of which

10 FIGURE 1 is a partial cross-section of a tap in accordance with the present invention,

FIGURE 2 is a further partial cross-section of the tap of Figure 1 in an intermediate position, and

15 FIGURE 3 is a partial cross-section of the tap in the normally considered fully open position.

Referring to Figure 1, this shows a tap body 1 having a passageway 2 therein for the flow of beer  
20 from a suitable end coupling 3. Within the tap body 1 is a bore 4 containing an axially movable piston 5. The bore 4 has a frusto-conical portion 6 which can be engaged by an 'O' ring 7 on the piston to seal the tap. Downstream of the sealing region provided by the  
25 'O' ring there is an extension having three portions, namely a narrower cross-sectional area portion 8, an enlarged head 9 and an enlarged diameter shoulder 10.

Downstream of the sealing region of the tap the bore of the tap is provided with a constricted  
30 region 11, a larger diameter region 12 and a further larger diameter region 13.

The enlarged diameter region 12 is normally engaged by the shoulder 10 and the head 9 normally sits within the enlarged diameter cross-sectional area

of the bore 13 with the tap in the fully closed position as shown in Figure 1. The sealing ring 7 engages the frusto-conical portion 6 and no beer can flow through the tap.

5           The tap is operated by means of a handle 14 which pivots on a cross rod 15 and on a heel 16 bearing on the head member 17 of the tap. The general principal of a handle pivoting on the head member is well known. In this particular case however, there is  
10 provided a groove 18 in the head member 17 into which the heel 16 can fit to provide an intermediate detent for the movement of the handle 14. A spring 19 maintains the piston 5 in the closed position and an 'O' ring 20 seals the piston within the bore 4. A  
15 further annular cup seal 21 keeps the bore 4 clean for the sealing 'O' ring 20. It can be seen that there is a smaller gap indicated by 22 between the head member 17 and the handle 14, and the handle 14 can be pushed in the direction of arrow 23 by a small amount to  
20 "crack" the valve open. The normal direction of movement of the handle is in the direction of arrow 24.

          If the handle is moved in the direction of arrow 24 so that the heel 16 rests in the groove 18,  
25 the tap will adopt the position shown in Figure 2. It can be seen that in this circumstance the head 9 still is within the enlarged diameter portion 13 of the downstream bore of the tap and the 'O' ring 7 is clear of the frusto-conical portion 4 so that relatively  
30 uninterrupted flow of beer is permitted through the tap. This position may be used to dispense highly carbonated beer or low carbonated beer without any significant agitation.



Further movement of the handle 14 in the direction of arrow 24 will cause the handle to move to the normal fully open position when surface 25 will lie on top of the head member 17. In this position the interior of the tap will adopt the locations shown in Figure 3. It can now be seen that although the sealing ring 7 is well clear of the bore 4 and the frusto-conical region 6, the head member 9 is within the narrower diameter region 11 and beer is forced down through the grooves 26 in the head member 9. This results in a large pressure drop and enhanced agitation of the beer and provides for a creaming action.

With low carbonated beer, all the beer can be dispensed with the tap in the fully open condition as shown in Figure 3 to produce an optimum head presentation.

Alternatively, if, when the tap is fully opened as is shown in Figure 3, the beverage starts to produce an unacceptably large quantity of creamy head, the tap can be returned to the position shown in Figure 2, so that a relatively uninterrupted flow of beer, without any significant agitation can be poured. This will increase the quantity of beer in the glass without further increase of the head.

With more highly carbonated beers, the size and shape of the enlarged cross-section on the piston 9, can be so produced as to provide the required amount of agitation to give an optimum presentation of an individual beverage, with the tap fully open as is shown in Figure 3.

If the beverage varies from the beer specification for which the size and shape of the enlarged cross-section on the piston 9 was produced,

the resultant presentation of the beer will be affected giving either too much or too little foam. When more than the required amount of foam is being produced, the tap can be returned to the position shown in Figure 2, so that a relatively uninterrupted flow of beer, without any significant agitation, can be used to pour beer into a glass. This reduces the amount of foam. On the occasion when the amount of foam produced is insufficient the tap can be replaced to the closed position where reverse movement of the handle in the direction of arrow 23 will result in lifting of the piston 5 by a small amount, movement of the 'O' ring 7 from the frusto-conical portion 6, but the shoulder 10 then acts as a restricter to produce a creaming effect as the shoulder 10 has an extreme diameter just smaller than the diameter of the portion 12 of the bore of the tap. The required amount of foam can then be produced to give the optimum presentation required.

It will be appreciated that the grooves 26 could be helically disposed in the head 9 if required.

## CLAIMS:

1. A tap for dispensing beverage containing a dissolved gas, the tap including a body having a passage therethrough for the flow of beverage from an inlet to an outlet, a sealing member movable in the body between a sealed position and an open position, the member including a downstream extension beyond the sealing region, the downstream extension having a narrower cross-section and an enlarged cross-section, the narrower cross-section being between the enlarged cross-section and the sealing region, the bore of the tap body downstream of the sealing member including a narrower cross-sectional area portion and downstream of the narrower cross-sectional area portion a larger cross-sectional area portion, the enlarged cross-section of the downstream extension being in the larger cross-sectional area portion of the bore when the tap is in the closed position, the relative dimensions of the body and the extension being such that the enlarged cross-sectional area of the extension enters the smaller cross-sectional portion of the bore as the sealing member of the tap approaches the fully open position so that the flow of beer through the tap is constricted as the tap reaches the fully open position to produce agitation of the beer.
2. A tap as claimed in Claim 1 in which there is provided an enlarged cross-sectional area shoulder between the sealing member and the narrower cross-sectional area of the extension.
3. A tap as claimed in any one of Claims 1 or 2 in which the sealing region is an 'O' ring which cooperates with a frusto-conical portion of the bore of the tap.

4. A tap as claimed in any one of Claims 1 to 3 in which all bores within the tap are circular in cross-section.
5. A tap as claimed in any one of Claims 1 to 4 in which the larger cross-sectional area portion of the extension incorporates grooves.
6. A tap as claimed in Claim 5 in which the grooves are axially located along the length of the larger cross-sectional area extension.
- 10 7. A tap as claimed in any one of Claims 1 to 6 in which the tap is provided with a closed position, a fully open position and a detent to provide a stable position intermediate the closed and open positions where the larger cross-sectional area of the extension
- 15 remains in the larger cross-sectional area of the bore.
8. A tap as claimed in any one of Claims 1 to 7 in which the tap is openable by a small reverse movement of a handle operating the tap to open the
- 20 sealing region by a small amount to provide a creaming action.
9. A tap as claimed in any one of Claims 1 to 8 in which the sealing member comprises a piston axially movable within a bore in the tap.
- 25 10. A tap as claimed in Claim 9 in which the piston incorporates 'O' ring seals.
11. A tap substantially as herein described with reference to and as illustrated by the accompanying drawings.